

Exhibit 29

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

Network-1 Technologies, Inc.,

Plaintiff,

v.

Alcatel-Lucent USA Inc., *et al.*,

Defendants.

Case No. 6:11-cv-00492-RWS-KNM

Jury Trial Demanded

Lead Consolidated Case

AMENDED EXPERT REPORT OF DEAN P. NEIKIRK, PH.D ON INVALIDITY

194. *Chang* further notes that “a standard RJ45 connector is used with twisted-pair cable in Ethernet 10Base-T, 100Base-T, and Token Ring systems,” where the “twisted-pair cable contains 6 wires (3 pairs) or 8 wires (4 pairs).”¹⁶¹ In a six-wire configuration of *Chang*, two wires (one pair) would be unused for Ethernet communications, and in an 8-wire configuration, four wires (two pairs) would be unused for Ethernet communications.

195. In a combination of *Chang* and *Woodmas*, one of *Chang*’s pairs of wires that are unused for Ethernet communications can be used to implement *Woodmas*’s detection and remote powering technique, which would then use that pair as a data signaling pair. A POSITA would have recognized that, in three-pair or four-pair embodiments of *Chang*’s cable 205, one or two pairs (respectively) would be unused for Ethernet data transmission, and thus could be used for remote detection and powering. **Indeed, *Chang* specifically teaches using a pair of wires different from those used for Ethernet data transmission to perform remote detection and powering.**¹⁶²

196. Based on these teachings from *Chang*, a POSITA would have been motivated to consider remote detection and powering techniques that use a wire pair. One such reference that a POSITA would have considered is *Woodmas*, which teaches performing detection and powering on a wire pair. *Woodmas*’s detection technique involves a voltage controlled oscillator 88, which generates a power status signal.¹⁶³ This power status signal is a “frequency modulated signal between 250 and 350 Khz in accordance with the voltage applied to the control-voltage-in terminal corresponding to a range of 15 to 50 VDC.”¹⁶⁴ In other words, the power status signal

¹⁶¹ *Chang* ’885, 8:53-57; *Chang* ’248, 13:26-28.

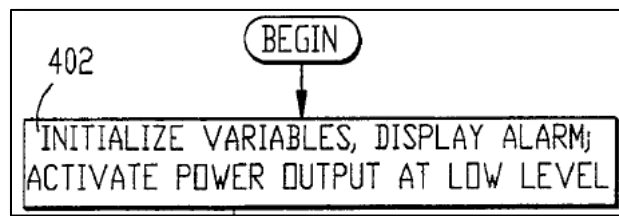
¹⁶² ***Chang* ’885, 10:3-7; *Chang* ’248, 16:1-4.**

¹⁶³ *Woodmas*, 6:16-20.

¹⁶⁴ *Id.*

Report and Recommendation's construction of "low level current."²¹¹ According to Network-1, the term "low level current" in claim 6 means "a current at a level that is sufficiently low that, by itself, it will not operate the access device; a data signal is not a low level current." The Report and Recommendation construed "low level current" to mean "a non-data-signal current that is sufficient to begin start up of the access device but that is not sufficient to sustain the start up."

221. According to *Woodmas*, before full power is provided to connected remote devices, a low level voltage, with a current limited to 15 mA, is delivered.²¹² *Woodmas* explains that this 15 mA current is applied "when power delivery unit 34 is initially energized."²¹³ Delivery of this 15 mA current is represented in the flowchart of Figure 4A, reproduced in part below.



222. As a point of reference, this current of 15 mA in *Woodmas* is lower than the example of 20 mA given in the '930 patent.²¹⁴ This current level in *Woodmas* is sufficiently low that, by itself, it will not operate the connected remote device, and it is also not a data signal. Indeed, *Woodmas* teaches that the 15 mA current is applied to cable 30 "before full operating power is imposed."²¹⁵ After supplying this 15 mA current, *Woodmas* "asks whether the power status signal is present as detected" and provides the power status signal to microcontroller 54 if

²¹¹ I understand that objections to the claim construction order have not yet been fully briefed, and as such, I continue to include analysis of Network-1's proposed claim constructions.

²¹² *Woodmas*, 6:45-47; 7:24-26.

²¹³ *Id.* at 3:50-52.

²¹⁴ '930 patent, 2:66-3:2.

²¹⁵ *Woodmas*, 7:24-26.

detected.²¹⁶ By delivering this 15 mA current before full operating power is supplied and looking for a return voltage representative of the current, “both the presence and functionality of power delivery unit 76 are checked before full power is imposed on cable 30.”²¹⁷

223. According to Network-1’s infringement theory (with which I disagree), where the “main power source” can be a AC/DC converter in a data node, *Woodmas*’s 15 mA current would come from that power source. In particular, I understand that Network-1’s infringement theory assumes that, whatever source of power delivers operating power to the “data node,” that source of power is also the source of power for the “low level current.” While I disagree with this interpretation of the functions of the recited “main power source,” under such a theory the source of current for *Woodmas*’s 15 mA current would be the same as the source of operating current for the data node (e.g., *Chang*’s network hub) in a combination of *Chang* and *Woodmas*. Thus, the source of power for *Chang*’s network hub would also be the source of current for the 15 mA current, and would be the “main power source” according to Network-1’s infringement theory.

224. For all of the reasons discussed above, a POSITA would have been motivated to combine *Woodmas*’s remote detection and powering technique, including its disclosure of a “low level current,” with *Chang*’s remote detection and powering system. In this combination, as discussed above, the 15 mA current as taught by *Woodmas* would be supplied on a wire pair unused for Ethernet communications of *Chang*, which would also be used to carry *Woodmas*’s power status signal.

225. With respect to the claim term “from said main power source,” Network-1 asserts that no construction is necessary, and the Report and Recommendation’s claim construction

²¹⁶ *Id.* at 7:39-52.

²¹⁷ *Id.* at 7:50-52.

order found that “from said main power source” has its plain and ordinary meaning and declined to further construe the term. As I discussed above in connection with the claim term “main power source,” *Chang* in view of *Woodmas* discloses a “main power source” that delivers both power to the “data node” and a “low level current” to the access device under Network-1’s application of its claim construction (with which I disagree). As discussed above, I understand that Network-1 asserts an infringement theory in this case under which the “main power source” may be any upstream source of power (e.g., an AC wall outlet or AC-DC converter) that supplies power to the data node. Although I disagree with this theory, under this theory *Chang* in view of *Woodmas* discloses that the “low level current” is delivered “from said main power source to the access device over said data signaling pair.” In particular, under this theory the source of power for *Chang*’s data hub would also be the source of power for *Woodmas*’s 15 mA detection current in a combination of *Chang* and *Woodmas*. This power source for *Chang*’s data hub (e.g., an AC wall outlet or AC-DC converter) would be the “main power source,” under Network-1’s theory, from which the 15 mA current is delivered.

226. *Chang* in view of *Woodmas* discloses a “low level current” under Network-1’s application (with which I disagree)²¹⁸ of the defendants’ construction of that term, which is “a current sufficient to cause the access device to start up, but not sufficient to sustain the start up.” In particular, I understand that Network-1 asserts an infringement theory in this case where a current is “sufficient to cause the access device to start up but is not sufficient to sustain the start up and is therefore a low level current” where the current is merely used in a detection process,

²¹⁸ Under a correct application of the defendants’ construction, *Woodmas*’s 15 mA detection current does not cause the “start up” of connected equipment in *Woodmas*’s data network, and likewise would not do so when supplied to the remote terminal 602-1 in *Chang*’s data network.

subsequent to which the access device may actually start up. *See* Network-1's Response to Common Interrogatory No. 1 (July 13, 2016) at 13. I disagree with Network-1's application of the defendants' construction of "low level current," but note that under such an erroneous application, *Chang* in view of *Woodmas* does disclose a "low level current." In particular, as discussed above, *Woodmas*'s 15 mA current participates in a detection routine, subsequent to which a connected access device may actually start up. *Woodmas* explains that its 15 mA current is applied "when power delivery unit 34 is initially energized."²¹⁹ After supplying this 15 mA current, *Woodmas* "asks whether the power status signal is present as detected" and provides the power status signal to microcontroller 54 if detected.²²⁰ By delivering this 15 mA current before full operating power is supplied and looking for a return voltage representative of the low level current, "both the presence and functionality of power delivery unit 76 are checked before full power is imposed on cable 30."²²¹

227. *Chang* in view of *Woodmas* also discloses a "low level current" under the Report and Recommendation's construction of that term, which is "a non-data-signal current that is sufficient to begin start up of the access device but that is not sufficient to sustain the start up." As discussed above, I understand that Network-1 asserts an infringement theory in this case where a current is "sufficient to cause the access device to start up but is not sufficient to sustain the start up and is therefore a low level current" where the current is merely used in a detection process, subsequent to which the access device may actually start up. I disagree with Network-1's infringement theory, particularly in the context of the Report and Recommendation's construction of "low level current," but note that under such an erroneous application, *Chang* in

²¹⁹ *Woodmas*, 3:50-52.

²²⁰ *Id.* at 7:39-52.

²²¹ *Id.* at 7:50-52.

view of *Woodmas* does disclose a “low level current.” In particular, as discussed above, *Woodmas*’s 15 mA current participates in a detection routine, subsequent to which a connected access device may actually start up. *Woodmas* explains that its 15 mA current is applied “when power delivery unit 34 is initially energized.”²²² After supplying this 15 mA current, *Woodmas* “asks whether the power status signal is present as detected” and provides the power status signal to microcontroller 54 if detected.²²³ By delivering this 15 mA current before full operating power is supplied and looking for a return voltage representative of the low level current, “both the presence and functionality of power delivery unit 76 are checked before full power is imposed on cable 30.”²²⁴

h. “sensing a voltage level on the data signaling pair in response to the low level current”

228. *Chang* in view of *Woodmas* discloses this element of claim 6 under Network-1’s proposed construction of “low level current” and under Network-1’s apparent application of the Report and Recommendation’s construction of “low level current.”²²⁵ Also, for the reasons explained above, *Chang* in view of *Woodmas* discloses a “low level current” under Network-1’s application (with which I disagree) of the defendants’ construction, as well as the Report and Recommendation’s construction, as discussed above.

229. *Woodmas* teaches that, when the low level current of 15 mA is applied, the oscillator 88 senses the corresponding low level voltage, produces a “power status signal” representative of the low level voltage, and returns the power status signal to delivery unit 34.

²²² *Woodmas*, 3:50-52.

²²³ *Id.* at 7:39-52.

²²⁴ *Id.* at 7:50-52.

²²⁵ I understand that objections to the claim construction order have not yet been fully briefed, and as such, I continue to include analysis of Network-1’s proposed claim constructions.

- f. “a secondary power source arranged to supply power from the data node via said data signaling pair to the access device”**

401. *Fisher* in view of *Chang* and *Woodmas* discloses this element of claim 6. See the discussion and citations to *Fisher* in view of *Chang* provided above in connection with claim 6 in Section IX.C.1.f, and the discussion and citations to *Chang* in view of *Woodmas* provided above in Section IX.B.1.f.

- g. “delivering a low level current from said main power source to the access device over said data signaling pair”**

402. *Fisher* in view of *Chang* and *Woodmas* discloses this element of claim 6. See the discussion and citations to *Chang* in view of *Woodmas* provided above in connection with claim 6 in Section IX.B.1.g.

- h. “sensing a voltage level on the data signaling pair in response to the low level current”**

403. *Fisher* in view of *Chang* and *Woodmas* discloses this element of claim 6. See the discussion and citations to *Chang* in view of *Woodmas* provided above in connection with claim 6 in Section IX.B.1.h.

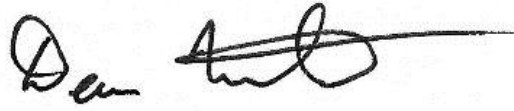
- i. “controlling power supplied by said secondary power source to said access device in response to a preselected condition of said voltage level”**

404. *Fisher* in view of *Chang* and *Woodmas* discloses this element of claim 6. See the discussion and citations to *Chang* in view of *Woodmas* provided above in connection with claim 6 in Section IX.B.1.i.

2. Claim 13

405. It is also my opinion that the combination of *Fisher*, *Woodmas*, and *Chang* renders obvious dependent claim 13 of the '930 patent. See the discussion and citations to *Fisher*,

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Dean Neikirk", followed by a long horizontal flourish.

Dean P. Neikirk, Ph.D

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